

Docket No.: S3-02P15734

NOV 24 2008

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Alfred K. DasslerNovember 24, 2008
Date**MAIL STOP: APPEAL BRIEF-PATENTS**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Before the Board of Patent Appeals and Interferences

Applic. No.	:	10/534,681	Confirmation No.: 7403
Inventor	:	Jürgen Dick, et al.	
Filed	:	May 12, 2005	
Title	:	Method for Determining the Position of a Component in a Stepped Bore of a Housing and an Injector for Fuel Injection	
TC/A.U.	:	3752	
Examiner	:	Davis D. Hwu	
Customer No.	:	24131	

Hon. Commissioner for Patents
Alexandria, VA 22313-1450

BRIEF ON APPEAL

Sir:

This is an appeal from the final rejection in the Office action dated July 1, 2008, finally rejecting claims 11 – 21, 23 and 24.

Appellants submit this *Brief on Appeal* including payment in the amount of \$540.00 to cover the fee for filing the *Brief on Appeal*.

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Page 1 of 16

NOV 24 2008

Real Party in Interest:

This application is assigned to Siemens Aktiengesellschaft of Germany. The assignment will be submitted for recordation upon the termination of this appeal.

Related Appeals and Interferences:

No related appeals or interference proceedings are currently pending which would directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

Status of Claims:

Claims 11 – 21, 23 and 24 are rejected and are under appeal. Claims 1 – 10 have been canceled.

Status of Amendments:

No claims were amended after the final Office action. A response under 37 CFR § 1.116 was filed on August 28, 2008. The Primary Examiner stated in an *Advisory Action* dated September 15, 2008 that the request for reconsideration had been considered but did not place the application in condition for allowance.

Summary of the Claimed Subject Matter:

The subject matter of each independent claim is described in the specification of the instant application. Examples explaining the subject matter defined in each of the independent claims, referring to the specification by page and line numbers, and to the drawings, are given below.

Application No. 10/534,681
Brief on Appeal, dated 11/24/08

Independent claim 11 reads as follows:

Independent method claim 11 recites a method for positioning a component (*Figs. 1A and 2, ref. # 10, page 5, line 23*) in a housing (*Figs. 1A, 1B and 2, ref. # 1, page 5, line 15*), the method comprising:

providing a housing (*Figs. 1A, 1B, and 2, ref. # 1, page 5, line 15*) with a first bore (*Figs. 1B and 2, ref. # 6a, page 5, line 34*) having a first diameter (*Figs. 1B and 2, ref. # d1, page 6, line 5*) and a second bore (*Figs. 1B and 2, ref. # 6b, page 6, line 6*) having second diameter (*Figs. 1B and 2, ref. # d2, page 6, line 6*) larger than the first diameter (*Figs. 1B and 2, ref. # d1, page 6, line 5*), and a step (*Figs. 1B and 2, ref. # 16, page 6, lines 7-8*) formed between the first bore (*Figs. 1B and 2, ref. # 6a, page 5, line 34*) and the second bore (*Figs. 1B and 2, ref. # 6b, page 6, line 6*);

fixing a first component (*Figs. 1B and 2, ref. # 2, page 5, lines 22-23*) with a lower side (*Figs. 2, ref. # 17a, page 6, lines 2-3*) in the first bore (*Figs. 1B and 2, ref. # 6a, page 5, line 34*);

inserting a coining ring (*Figs. 1B and 2, ref. # 3, page 6, line 11*) into the second bore (*Figs. 1B and 2, ref. # 6b, page 6, line 6*) up to the step (*Figs. 1B and 2, ref. # 16, page 6, lines 7-8*);

inserting a die (*Figs. 1B, ref. # 4, page 6, line 29*) with a first reference mark (*Figs. 1B, ref. # B, page 7, line 7*) marked thereon and a longitudinal bore (*Figs. 1B, ref. #*

Application No. 10/534,681
Brief on Appeal, dated 11/24/08

18, page 6, lines 31-32) formed therein into the second bore (Figs. 1B and 2, ref. # 6b, page 6, line 6);

inserting a probe (Figs. 1B, ref. # 5, page 6, lines 32-33) with a second reference mark (Figs. 1B, ref. # C, page 7, line 9) into the longitudinal bore (Figs. 1B, ref. # 18, page 6, lines 31-32) until the probe (Figs. 1B, ref. # 5, page 6, lines 32-33) contacts the first component (Figs. 1B and 2, ref. # 2, page 5, lines 22-23);

establishing a reference measurement (Figs. 1B, ref. # X, page 7, line 11) between the first (Figs. 1B, ref. # B, page 7, line 7) and second reference marks (Figs. 1B, ref. # C, page 7, line 9) representing a distance (Figs. 1B and 2, ref. # H, page 5, lines 23-25) between the lower annular surface (Figs. 1B and 2, ref. # 17, page 6, line 18-19) of the coining ring (Figs. 1B and 2, ref. # 3, page 6, line 11) and the lower side (Figs. 2, ref. # 17a, page 6, lines 2-3) of the first component (Figs. 1B and 2, ref. # 2, page 5, lines 22-23);

compressing the coining ring (Figs. 1B and 2, ref. # 3, page 6, line 11) with the die (Figs. 1B, ref. # 4, page 6, line 29) until the reference measurement (Figs. 1B, ref. # X, page 7, line 11) corresponds to a predefined value for the distance (Figs. 1B and 2, ref. # H, page 5, lines 23-25); and

placing the component (Figs. 1A and 2, ref. # 10, page 5, line 23) in the second bore (Figs. 1B and 2, ref. # 6b, page 6, line 6) at the distance (Figs. 1B and 2, ref. # H, page 5, lines 23-25).

Application No. 10/534,881
Brief on Appeal, dated 11/24/08

Independent claim 18 reads as follows:

Independent device claim 18 recites an injector (*Fig. 2, , page 11, line 4 to page 12, line 9*) for fuel injection into an internal combustion engine of a motor vehicle, the injector (*Fig. 2, , page 11, line 4 to page 12, line 9*) comprising:

a housing (*Figs. 1A, 1B, and 2, ref. # 1, page 5, line 15*) having a first bore (*Figs. 1B and 2, ref. # 6a, page 5, line 34*) with a first diameter (*Figs. 1B and 2, ref. # d1, page 6, line 5*) and a second bore (*Figs. 1B and 2, ref. # 6b, page 6, line 6*) with second diameter (*Figs. 1B and 2, ref. # d2, page 6, line 6*) larger than the first diameter (*Figs. 1B and 2, ref. # d1, page 6, line 5*), and a step (*Figs. 1B and 2, ref. # 16, page 6, lines 7-8*) formed between said first bore (*Figs. 1B and 2, ref. # 6a, page 5, line 34*) and said second bore (*Figs. 1B and 2, ref. # 6b, page 6, line 34*), said step (*Figs. 1B and 2, ref. # 16, page 6, lines 7-8*) having a step width (*Figs. 1B, ref. # d4, page 10, line 6*) and a step surface (*Figs. 1B and 2, at ref. # 16*);

a first component (*Figs. 1B and 2, ref. # 2, page 5, lines 22-23*) fixedly disposed in said first bore (*Figs. 1B and 2, ref. # 6a, page 5, line 34*);

a second component (*Figs. 1A and 2, ref. # 10, page 5, line 23*) disposed in said second bore (*Figs. 1B and 2, ref. # 6b, page 6, line 6*), said second component (*Figs. 1A and 2, ref. # 10, page 5, line 23*) having an end surface (*Figs. 2, at ref. # 17*); and

Application No. 10/534,681
Brief on Appeal, dated 11/24/08

a coining ring (*Figs. 1B and 2, ref. # 3, page 6, line 11*) having a contact surface in contact with said step surface (*Figs. 1B and 2, at ref. # 16*), said coining ring (*Figs. 1B and 2, ref. # 3, page 6, line 11*) having an annular width (*Figs. 1B, ref. # d3, page 10, lines 4-5*) and a height stamped by a die (*Figs. 1B, ref. # 4, page 6, line 29*) to an exact predefined distance (*Figs. 1B and 2, ref. # H, page 5, lines 23-25*) from said first component (*Figs. 1B and 2, ref. # 2, page 5, lines 22-23*), said annular width (*Figs. 1B, ref. # d3, page 10, lines 4-5*) being wider than said step width (*Figs. 1B, ref. # d4, page 10, line 6*) for defining an enlarged contact surface (*Figs. 2, at ref. # 17, page 10, lines 5-7*) for an effective force between said second component (*Figs. 1A and 2, ref. # 10, page 5, line 23*) and said step (*Figs. 1B and 2, ref. # 16, page 6, lines 7-8*), said end surface (*Figs. 2, at ref. # 17*) of second component (*Figs. 1A and 2, ref. # 10, page 5, line 23*) being in contact with and resting on said enlarged contact surface (*Figs. 2, at ref. # 17, page 10, lines 5-7*).

Grounds of Rejection to be Reviewed on Appeal

1. Whether or not claims 18 – 21, 23, and 24 are anticipated by Frank et al. (U.S. Patent No. 6,705,587 B1) (hereinafter “Frank”) under 35 U.S.C. § 102(b).
2. Whether or not claims 11 - 17 are obvious over Frank (U.S. Patent No. 6,705,587 B1) under 35 U.S.C. § 103.

Argument:

Whether claims 18-21, 23, and 24 are anticipated by Frank under 35 U.S.C. §102.

Application No. 10/534,681
Brief on Appeal, dated 11/24/08

Claims 18-21, 23, and 24 are not anticipated by Frank under 35 U.S.C. §102:

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 18 calls for, *inter alia*:

a coining ring having a contact surface in contact with the step surface, the coining ring having an annular width and a height stamped by a die to an exact predefined distance from the first component, the annular width being wider than the step width for defining an enlarged contact surface for an effective force between the second component and the step, the end surface of second component being in contact with and resting on the enlarged contact surface.

Claim 18 also calls for, *inter alia*:

a housing having a first bore with a first diameter and a second bore with second diameter larger than the first diameter, and a step formed between the first bore and the second bore, the step having a step width and a step surface.

Claim 18 also calls for, *inter alia*:

a first component fixedly disposed in the first bore.

Application No. 10/534,681
Brief on Appeal, dated 11/24/08

It is once again noted that the corporate assignee of the Frank reference is also the assignee of the instant application. Therefore, applicants are very familiar with the Frank reference.

The Examiner refers to the annotated Fig. 1 of Frank (provided with the final Office action) in support of the rejection over Frank. The following remarks pertain to the Fig. 1 of Frank provided by the Examiner.

The Examiner simply ignores several limitations recited in claim 18 when considering the Frank reference.

The instant application as claimed recites a coining ring having a contact surface in contact with the step surface, the coining ring having an annular width and a **height stamped by a die to an exact predefined distance from the first component.**

In the marked-up Fig. of Frank, the Examiner designates an unlabeled element as a coining ring. The element designated as a coining ring is simply not a coining ring as required by the instant application as claimed. Particularly, the fact that the coining ring is stamped to a specific height against the shoulder, provides the coining ring with structural features which are not present in the element designated as a "coining ring" by the Examiner. Firstly, the fact that the coining ring is stamped against the step allows the coining ring to conform to the structural features (machining marks pertaining to surface finish and manufacturing tolerances) of the surface of the step, and causes the coining ring to be securely seated on the step. Furthermore, as seen in the enlarged portion of Fig. 1B, the

Application No. 10/534,681
Brief on Appeal, dated 11/24/08

coining ring is deformed beyond the edge of the step and conforms to the inside diameter $d1$ of the first bore. Moreover, the fact that the ring is coined necessarily work hardens the ring. Frank does not disclose that the element which the Examiner considers the "coining ring" (In marked-up Fig. 1) does not have the structural characteristics of a coined ring. Therefore, in the provided Fig. 1 of Frank, the Examiner's designation of a "coining ring", is not reasonable. It is noted that the statements made with respect to coining are based on undersigned's practical experience of more than 10 years in the metal stamping industry.

As seen from the above-given remarks, the reference does not show a coining ring having a contact surface in contact with the step surface, the coining ring having an annular width and a height stamped by a die to an exact predefined distance from the first component, as recited in claim 18 of the instant application.

Moreover, the instant application as claimed recites that a step is formed between the first bore and the second bore, the step has a step width and a step surface.

In Fig. 1 of Frank, as provided by the Examiner, the Examiner designates the smallest bore as the "first bore" and a larger bore as the "second bore". However, Frank does not disclose that the bores designated by the Examiner have a step formed between the "first bore" and the "second bore". This is because there is another bore (not labeled by the Examiner) which has a diameter that is larger than the "first bore" and smaller than the "second bore". The "step" designated by the Examiner is formed between this other bore and the "second bore". Therefore, the "step" designated by the Examiner is not formed between the "first bore" and the

Application No. 10/534,681
Brief on Appeal, dated 11/24/08

"second bore", as required in the claims of the instant application. Accordingly, the Examiner's designation of elements in the attached Fig. 1, are not accurate.

Therefore, as seen from the above-given remarks the reference does not show a housing having a first bore with a first diameter and a second bore with second diameter larger than the first diameter, and a step formed between the first bore and the second bore, the step having a step width and a step surface, as recited in claim 18 of the instant application.

Moreover, claim 18 of the instant application recites that the first component is fixedly disposed in the first bore. The Examiner alleges that Frank discloses a "first component 6". However, Frank discloses that the element designated "6" is valve lifter. Frank explicitly discloses that the valve lifter (6) moves in an axial direction to open the valve element (7). Therefore, because Frank discloses that the valve lifter (6) moves, Frank does not disclose that the valve lifter (6) is fixedly disposed in the "first bore". This is contrary to the instant application as claimed, which explicitly recites that the first component is fixedly disposed in the first bore.

As seen from the above-given remarks, the reference does not show a first component fixedly disposed in the first bore, as recited in claim 18 of the instant application.

Although the Examiner does not refer to the provided Fig. 2 with respect to the rejection of claim 18, Appellants will address with the following further remarks,

Application No. 10/534,881
Brief on Appeal, dated 11/24/08

which pertain to the inaccurate designation of elements as shown in the annotated Fig. 2 of Frank provided by the Examiner with the final Office action.

In Fig. 2, the Examiner designates the intermediate element between the injector housing (1) and the housing (3) as the "coining ring".

This designation is lacking for several reasons. Firstly the "coining ring" does not have a contact surface in contact with the step surface, as recited in claim 18 of the instant application. Moreover, the "coining ring" does not have an annular width that is wider than the step, as recited in claim 18 of the instant application. Furthermore, the "coining ring" does not have an enlarged contact surface in contact with and resting on the end of a second component, as recited in claim 18 of the instant application.

As seen from the above-given remarks, the reference does not show a coining ring having a contact surface in contact with the step surface, the coining ring having an annular width and a height stamped by a die to an exact predefined distance from the first component, the annular width being wider than the step width for defining an enlarged contact surface for an effective force between the second component and the step, the end surface of second component being in contact with and resting on the enlarged contact surface, as recited in claim 18 of the instant application.

Application No. 10/534,681
Brief on Appeal, dated 11/24/08

The following further remarks pertain to the Examiner's remarks provided on the continuation sheet of the Advisory action with respect to claim 18 of the instant application.

The Examiner alleges that "...this bore can also be considered to be a 'step' because it transitions the smaller bore to the larger bore."

Appellants appreciate the Examiner's allegation, however if this additional bore is considered a step or part of the step then the limitation that the annular width being wider than the step width for defining an enlarged contact surface for an effective force between the second component and the step, as recited in claim 18 is not met. Therefore, the Examiner's allegation pertaining to the step does not make sense.

Furthermore, the Examiner alleges that "a component being fixedly disposed in another component does not necessarily preclude that component from moving within the other component."

The Examiner's allegation is not correct. The limitation in claim 18 is that the first component is fixedly disposed in the first bore. If an element is fixedly disposed in a bore, it is fixed and therefore the element does not move. Therefore, the claim language of "fixedly disposed" does indeed preclude movement of the component in the bore. Accordingly, the Examiner's allegation pertaining to fixedly disposed not precluding movement, is in error.

Application No. 10/534,881
Brief on Appeal, dated 11/24/08

The Examiner alleges that Frank discloses "a coining ring since there are no specific details of this 'coining ring' recited in the claims."

Here again the Examiner is in error. As seen from the above-given remarks, the coining as recited in claim 18 is stamped to a specific height against the step. The fact that the coining ring is stamped to a specific height provides the coining ring with the structural features as discussed above. Accordingly, the Examiner's allegation with respect to the coining ring, are in error.

As seen from the above-given remarks, claim 18 is allowable over Frank.

Since claim 18 is allowable over Frank, dependent claims 19-21, 23, and 24 are allowable over Frank as well.

Whether claims 11-17 are obvious over Frank under 35 U.S.C. §103.

Claims 11-17 are not obvious over Frank under 35 U.S.C. §103:

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 11 calls for, *inter alia*:

inserting a die with a first reference mark marked thereon and a longitudinal bore formed therein into the second bore, inserting a probe with a second reference mark into the longitudinal bore until the probe contacts the first component, establishing a reference

Application No. 10/534,681
Brief on Appeal, dated 11/24/08

measurement between the first and second reference marks representing a distance between the lower annular surface of the coining ring and the lower side of the first component, and compressing the coining ring with the die until the reference measurement corresponds to a predefined value for the distance.

On page 3 of the Office action the Examiner alleges that "since Frank et al. discloses the structural limitations of the instant invention (see attached Fig. 2), the methods would have been matters of design choice to accurately position the various components during assembly."

It is respectfully noted that the Examiner's allegation is quite absurd. Particularly, as noted above, the Fig. 2 of Frank provided by the Examiner comes nowhere near meeting the structural requirements of the present invention as claimed.

Furthermore, Frank is completely silent with respect to any coining steps. Frank discloses only surface grinding steps and a prestressing device which is screwed in for deforming the compensation collar (9). Frank does not disclose any dies or probes, as required in the method of the instant application as claimed. Therefore, it is respectfully noted that the Examiner's allegation with respect to the obviousness rejection of the methods steps, is absurd.

It is a requirement for a *prima facie* case of obviousness, that the prior art references must teach or suggest all the claim limitations.

As seen from the above-given remarks, the reference does not show or suggest inserting a die with a first reference mark marked thereon and a longitudinal bore formed therein into the second bore, inserting a probe with a second reference mark into the longitudinal bore until the probe contacts the first component,

Application No. 10/534,681
Brief on Appeal, dated 11/24/08

establishing a reference measurement between the first and second reference marks representing a distance between the lower annular surface of the coining ring and the lower side of the first component, and compressing the coining ring with the die until the reference measurement corresponds to a predefined value for the distance, as recited in claim 11 of the instant application.

The references applied by the Examiner do not teach or suggest all the claim limitations. Therefore, it is believed that the Examiner has not produced a *prima facie* case of obviousness.

The following further remarks pertain to the Examiner's remarks provided on the continuation sheet of the Advisory action with respect to claim 11 of the instant application.

The Examiner alleges that "there is nothing absurd about the product by process rejection of claim 11 since all of the structural limitations have been met."

The Examiner is in error. Particularly, claim 11 is strictly a method claim. Claim 11 is a method for positioning a component in a housing. Claim 11 is not a product-by-process claim, as a product is not claimed therein. Therefore, the Examiner's allegation pertaining to a product-by-process rejection of claim 11 is completely misplaced and incorrect.

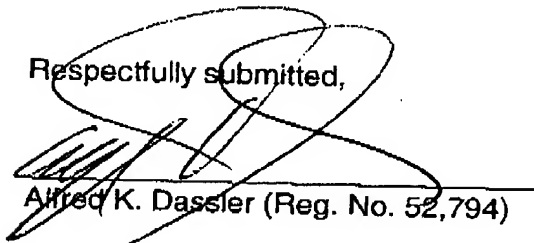
As seen from the above-given remarks, claim 11 is allowable over Frank.

Since claim 11 is allowable over Frank, dependent claims 12-17 are allowable over Frank as well.

Based on the above-given remarks, the honorable Board is therefore respectfully urged to reverse the final rejection of the Primary Examiner.

If an extension of time is required for this submission, petition for extension is herewith made. Any fees due should be charged to Deposit Account No. 12-1099 of Lerner Greenberg Sterner LLP.

Respectfully submitted,



Alfred K. Dassler (Reg. No. 52,794)

/lq
Date: November 24, 2008
Lerner Greenberg Sterner LLP
Post Office Box 2480
Hollywood, Florida 33022-2480
Tel: (954) 925-1100
Fax: (954) 925-1101

Claims Appendix:

11. A method for positioning a component in a housing, the method comprising:

providing a housing with a first bore having a first diameter and a second bore having second diameter larger than the first diameter, and a step formed between the first bore and the second bore;

fixing a first component with a lower side in the first bore;

inserting a coining ring into the second bore up to the step;

inserting a die with a first reference mark marked thereon and a longitudinal bore formed therein into the second bore;

inserting a probe with a second reference mark into the longitudinal bore until the probe contacts the first component;

establishing a reference measurement between the first and second reference marks representing a distance between the lower annular surface of the coining ring and the lower side of the first component;

compressing the coining ring with the die until the reference measurement corresponds to a predefined value for the distance; and

placing the component in the second bore at the distance.

Application No. 10/534,681
Brief on Appeal, dated 11/24/08

12. The method according to claim 11, wherein the housing is an injector housing.
13. The method according to claim 12, which further comprises monitoring the reference measurement using a mechanical or optical measuring device during compression of the coining ring.
14. The method according to claim 12, which further comprises recording the reference measurement using an electrical measuring device.
15. The method according to claim 12, wherein the component and the first component are inserted into a stepped bore of a housing of a fuel injector.
16. The method according to claim 12, wherein the first component is configured as a piezo-electric actuator.
17. The method according to claim 16, wherein the first component is configured as a base plate of the actuator.
18. An injector for fuel injection into an internal combustion engine of a motor vehicle, the injector comprising:

a housing having a first bore with a first diameter and a second bore with second diameter larger than the first diameter, and a step formed between said first bore and said second bore, said step having a step width and a step surface;

Claims Appendix: Page 2 of 4

Application No. 10/534,681
Brief on Appeal, dated 11/24/08

a first component fixedly disposed in said first bore;

a second component disposed in said second bore, said second component having an end surface; and

a coining ring having a contact surface in contact with said step surface, said coining ring having an annular width and a height stamped by a die to an exact predefined distance from said first component, said annular width being wider than said step width for defining an enlarged contact surface for an effective force between said second component and said step, said end surface of second component being in contact with and resting on said enlarged contact surface.

19. The injector according to Claim 18, wherein said enlarged contact surface is smooth.

20. The injector according to Claim 19, wherein said enlarged contact surface at least one of polished and flat.

21. The injector according to Claim 20, wherein said enlarged contact surface is perpendicular to an axis of said bores.

22. The injector according to Claim 18, wherein said second component is a stroke inverter.

Application No. 10/534,681
Brief on Appeal, dated 11/24/08

23. The injector according to Claim 18, wherein said second component is a nozzle body or an activation element of a servo-valve.

24. The injector according to Claim 18, wherein said coining ring has the physical characteristics of a ring that has been coined against said shoulder.

Evidence Appendix:

No evidence pursuant to §§ 1.130, 1.131, or 1.132 or any other evidence has been entered by the Examiner and relied upon by appellant in the appeal.

Related Proceedings Appendix:

No prior or pending appeals, interferences or judicial proceedings are in existence which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in this appeal. Accordingly, no copies of decisions rendered by a court or the Board are available.